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January 1994



Mathematics 30
Grade 12 Diploma Examination

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January 1994

Mathematics 30

Grade 12 Diploma Examination

Description

Time allotted: 2.5 h. You may take an additional 0.5 h to complete the exam if needed.

Total possible marks: 70

This is a **closed-book** examination consisting of **three** parts:

Part A

has 42 multiple-choice questions each with a value of one mark.

Part B

has 7 numerical-response questions each with a value of one mark.

Part C

has 4 written-response questions for a total of 21 marks.

A tear-out formula sheet, z-score page, and 90% Box Plots are included in this booklet.

All graphs on this examination are computer-generated.

Instructions

- Fill in the information required on the answer sheet and the examination booklet as directed by the presiding examiner.
- You are expected to provide your own scientific calculator.
- Carefully read the instructions for each part before proceeding.
- The presiding examiner will collect your answer sheet and examination booklet and send them to Alberta Education.
- Do not fold the answer sheet.

Note: The perforated pages at the back of this booklet may be torn out and used for your rough work. **No marks** will be given for work done on the tear-out pages.

Introduction

The purpose of this document is to provide information to the public regarding the results of the 1990 election for the position of Mayor of the City of New York.

The results of the election are as follows:

Mayor: David Dinkins
Deputy Mayor: John L. Liu

The following table shows the results of the election for each of the five boroughs:

Table 1: Results of the 1990 election for Mayor of the City of New York

The following table shows the results of the election for each of the five boroughs:

Table 2: Results of the 1990 election for Deputy Mayor of the City of New York

The following table shows the results of the election for each of the five boroughs:

Table 3: Results of the 1990 election for Council Members of the City of New York

The following table shows the results of the election for each of the five boroughs:

Table 4: Results of the 1990 election for School District Superintendents of the City of New York

The following table shows the results of the election for each of the five boroughs:

Table 5: Results of the 1990 election for Judges of the City of New York

The following table shows the results of the election for each of the five boroughs:

Table 6: Results of the 1990 election for Members of the City of New York

The following table shows the results of the election for each of the five boroughs:

Table 7: Results of the 1990 election for Members of the City of New York

The following table shows the results of the election for each of the five boroughs:

Part A: Multiple Choice

42 Questions

Instructions

- Consider all numbers used in the questions to be **exact real** numbers and not the result of a measurement.
- Read each question carefully and decide which of the choices **best** completes the statement or answers the question.
- Locate that question number on the separate answer sheet provided and fill in the circle that corresponds to your choice.

Example

This diploma examination is for the subject of

- A. biology
- B. physics
- C. chemistry
- D. mathematics

Answer Sheet

(A) (B) (C) ●

- Use an **HB pencil only**.
- If you wish to change an answer, erase **all** traces of your first answer.

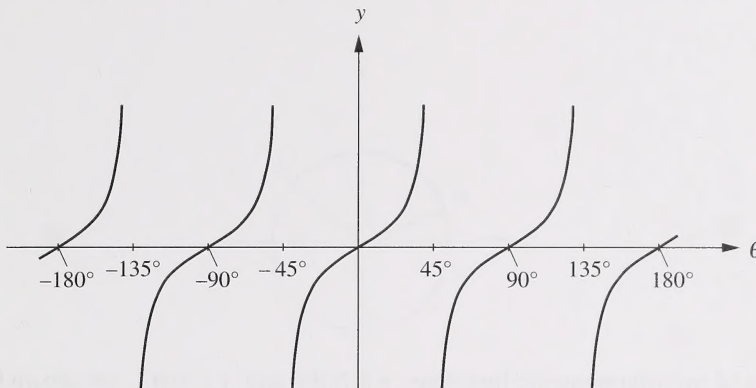
Note: The perforated pages at the back of this booklet may be torn out and used for your rough work. **No marks** will be given for work done on the tear-out pages.

Do not turn the page to start the examination until told to do so by the presiding examiner.



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1. The graph of a periodic function is shown below.



The period of this function is

- A. 45°
B. 90°
C. 180°
D. 270°
2. If $\cos \theta = \frac{a}{b}$ and $\tan \theta = \frac{c}{d}$, where $a, b, c, d \neq 0$, then $\sin \theta$ is

- A. $\frac{bd}{ac}$
B. $\frac{bc}{ad}$
C. $\frac{ad}{bc}$
D. $\frac{ac}{bd}$

3. If $\tan^2 \theta = \frac{3}{4}$, then $\sec^2 \theta$ is

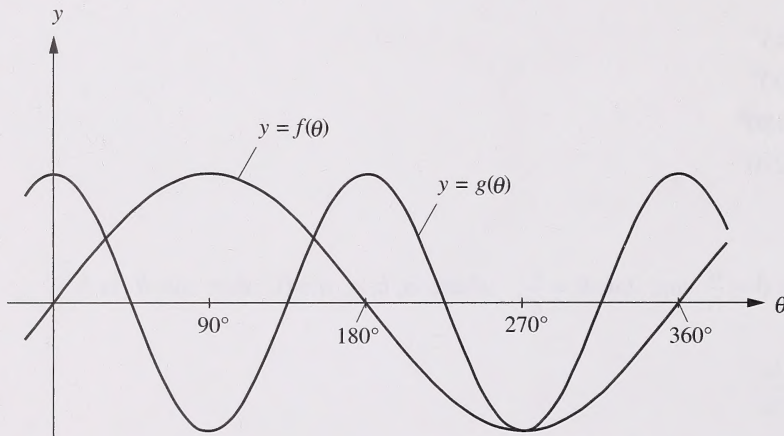
A. $\frac{5}{3}$

B. $\frac{7}{3}$

C. $\frac{5}{4}$

D. $\frac{7}{4}$

4. The graphs of two trigonometric functions, $y = f(\theta)$ and $y = g(\theta)$, are shown below. The graphs intersect three times in the domain $0^\circ \leq \theta \leq 360^\circ$.



Based on this information, the number of times the graph of $y = f(2\theta)$ would intersect the graph of $y = g(2\theta)$ in the domain $0^\circ \leq \theta \leq 360^\circ$ is

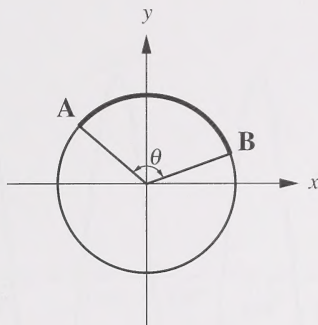
A. zero

B. 3

C. 6

D. impossible to determine

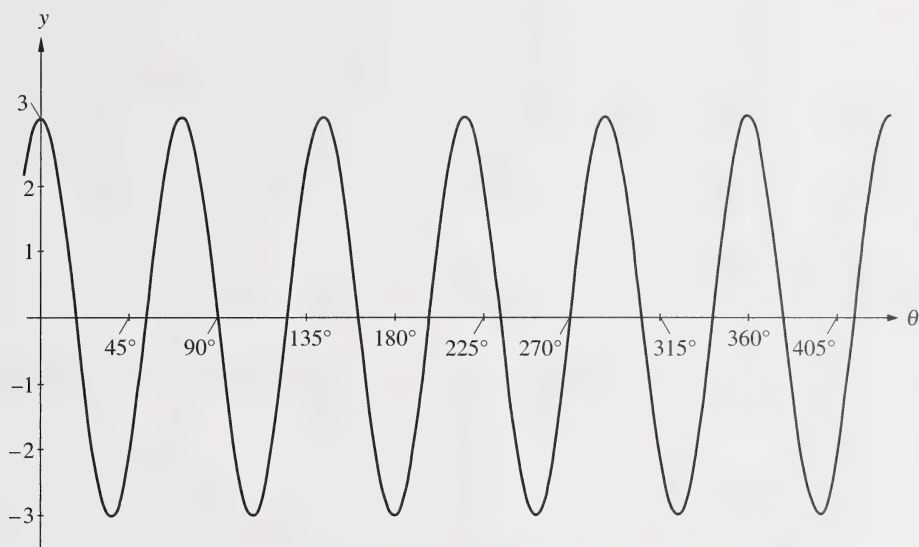
5. The equation of the circle shown below is $x^2 + y^2 - 16 = 0$.
The length of arc AB is $\frac{8\pi}{3}$.



- The measure of θ is
- A. $\frac{\pi}{6}$ rad
 - B. $\frac{\pi}{3}$ rad
 - C. $\frac{2\pi}{3}$ rad
 - D. $\frac{8\pi}{3}$ rad
6. The solutions to a trigonometric equation in the domain $0 \leq \theta < 2\pi$ are $\theta = \frac{\pi}{3}$ and $\theta = \frac{5\pi}{3}$. An equation that has these solutions is
- A. $3 \sin \theta - 1 = 0$
 - B. $3 \cos \theta - 5 = 0$
 - C. $2 \sin \theta - 1 = 0$
 - D. $2 \cos \theta - 1 = 0$

7. The expression $\frac{\sec^2 \theta}{\csc^2 \theta}$, where $\sin \theta \neq 0$ and $\cos \theta \neq 0$, is equal to
- A. $\tan^2 \theta$
 - B. $\cot^2 \theta$
 - C. $\frac{1}{\sin^2 \theta \cos^2 \theta}$
 - D. $\sin^2 \theta \cos^2 \theta$
8. The minimum distance that the graph of $y = \cos \theta$ has to be shifted to the right to become the graph of $y = \sin \theta$ is
- A. 2π rad
 - B. π rad
 - C. $\frac{\pi}{2}$ rad
 - D. $\frac{\pi}{4}$ rad
9. The general equation of the sine function is $f(\theta) = a \sin b(\theta + c) + d$. Which parameters in this equation affect the range of the sine function?
- A. a and b
 - B. a and d
 - C. b and c
 - D. b and d

10. A portion of the graph of $y = 3 \cos 5\theta$ is shown below.



The number of solutions to the equation $3 \cos 5\theta = 0$, in the domain $0^\circ \leq \theta < 360^\circ$, will be

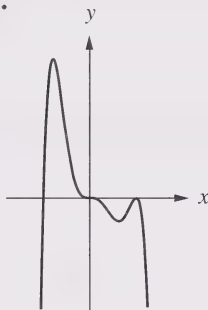
- A. 2
- B. 6
- C. 10
- D. 12

11. If $\sin \theta \neq 0$, then $\frac{\cos^2 \theta - \cos^4 \theta}{\sin^2 \theta}$ is equal to

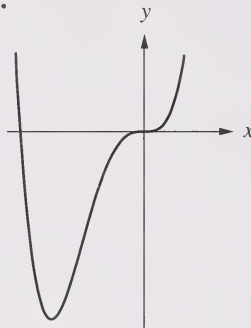
- A. $\cos^2 \theta$
- B. $\frac{1}{\cos^2 \theta}$
- C. $-\tan^2 \theta$
- D. $-\frac{1}{\tan^2 \theta}$

12. If all the x -intercepts of each of the following graphs are shown, then which graph could represent a fourth-degree polynomial function?

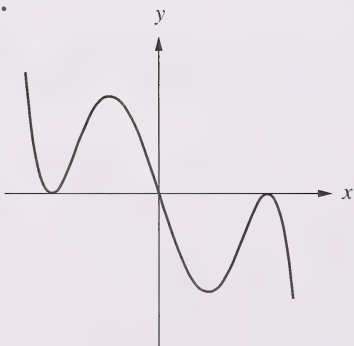
A.



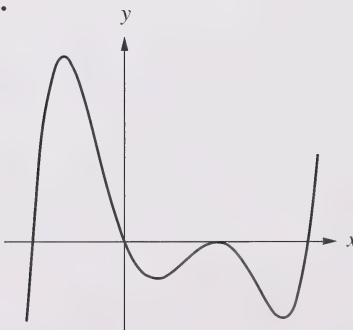
B.



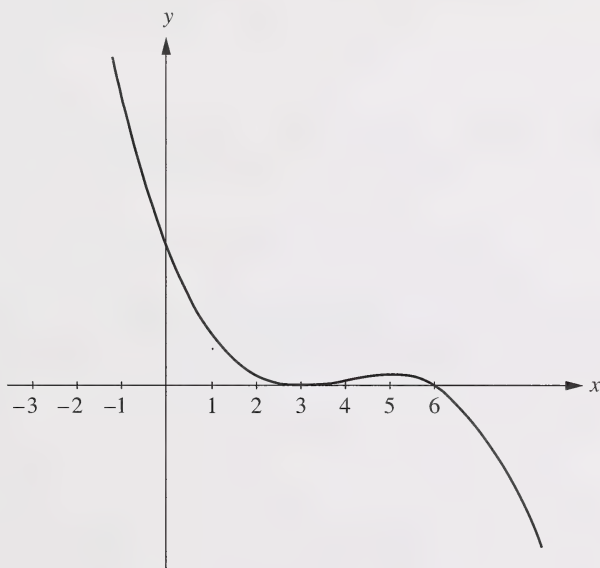
C.



D.



13. The graph of a third-degree polynomial function has x -intercepts of -3 , -1 , and 2 . The graph passes through the point $Q(1, -24)$. The y -intercept of this graph is
- A. -21
 - B. -18
 - C. 3
 - D. 6
14. $P(x) = ax^3 + bx^2 + cx + d$, $a \leq -1$, is an **integral** polynomial function with 3 and 6 as its roots. The graph of $y = P(x)$ is shown below.



The minimum positive y -intercept is

- A. 3
- B. 6
- C. 18
- D. 54

15. In a random sample of 20 drivers, 12 were using seat belts. Based on this sample, the corresponding 90% confidence interval for the proportion of all drivers using seat belts is
- A. 30% to 85%
 - B. 40% to 75%
 - C. 35% to 80%
 - D. 40% to 80%

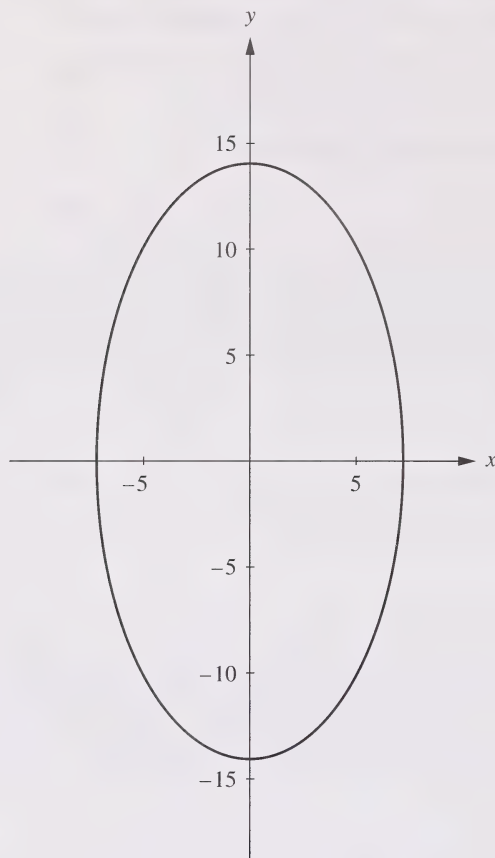
16. An automobile association researcher randomly selected 30 car models and recorded the price of each model and the number sold in a particular model year. The researcher then constructed a scatter plot of the data, using the horizontal axis for the price and the vertical axis for the number of cars sold.

The data were separated into 3 regions. The median points for each region were (\$15 000, 900), (\$22 000, 750), and (\$36 000, 225), and the line of best fit was drawn using the median fit method. Based on this information,

- A. there appears to be a positive correlation between the variables
 - B. there appears to be a negative correlation between the variables
 - C. there appears to be no correlation between the variables
 - D. no conclusion about the correlation between the variables can ever be reached; a second survey is needed, using more car models
17. A point $Q(m, n)$ on a scatter plot is (11, 44.5). The line of best fit is used to predict values of the dependent variable. The equation of a line of best fit for this scatter plot is $n = 3.5m + 1.5$, $1 \leq m \leq 20$. The difference between the actual value of n and the predicted value of n when $m = 11$ is
- A. 1.5
 - B. 3.5
 - C. 4.5
 - D. 7.5

18. In a population that is normally distributed,
- A. only the mean and the mode, but not the median, are equal
 - B. only the mean and the median, but not the mode, are equal
 - C. the mean, mode, and median are all different
 - D. the mean, mode, and median are all equal
19. Ball-bearings produced by a machine have a mean diameter of 3.50 cm and a standard deviation of 0.10 cm. Ball-bearings with diameters between 3.46 cm and 3.68 cm are considered to be of acceptable quality. Assuming a normal distribution of the diameters, what percentage of the ball-bearings produced is of acceptable quality?
- A. 31%
 - B. 49%
 - C. 62%
 - D. 93%
20. The length of time that the parts of a Rolo watch continue to work is normally distributed. The mean length of time that the parts work is 10 years, with a standard deviation of 2 years. If the manufacturer of Rolo watches wants fewer than 2.5% of watches to be returned under a warranty for parts, then the parts warranty should be for
- A. 11 years
 - B. 8 years
 - C. 6 years
 - D. 4 years

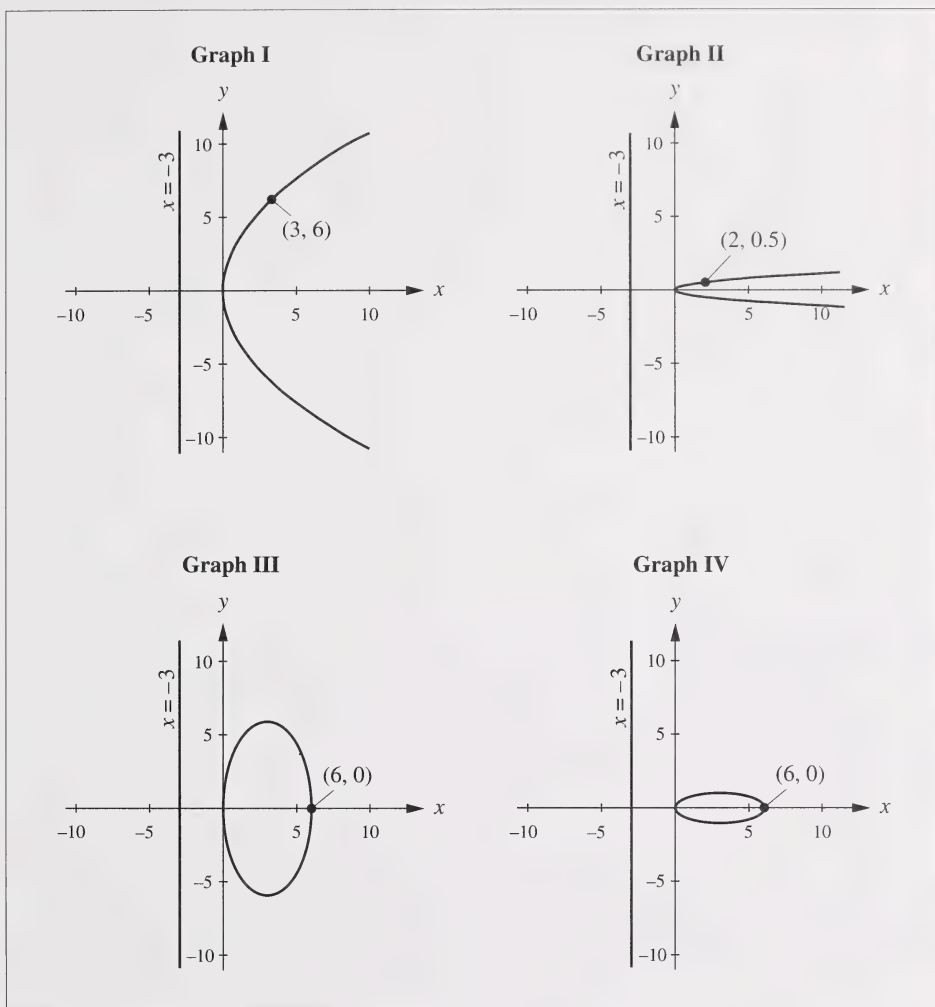
21. The equation of the ellipse shown below is $4x^2 + y^2 - 196 = 0$.



The equation of this ellipse may change when the ellipse is rotated about the origin. A rotation of k° may produce an xy -term with a non-zero coefficient in the equation. A value of k that produces an xy -term with a non-zero coefficient is

- A. 45°
- B. 90°
- C. 180°
- D. 360°

Use the following information to answer question 22.

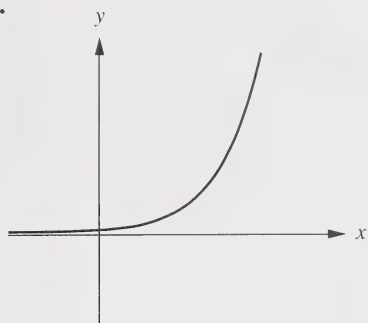


22. The quadratic relation with a point at the origin, a focus at $(3, 0)$, and a directrix of $x = -3$ is shown in
- A. graph I
 - B. graph II
 - C. graph III
 - D. graph IV

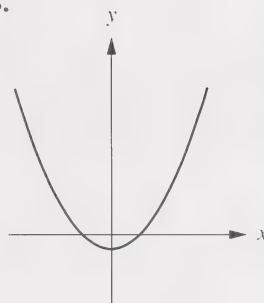
23. If the quadratic equation $Ax^2 + Cy^2 + F = 0$ defines a non-degenerate hyperbola, then which statement regarding the value of F is true?
- A. $F < 0$
 - B. $F > 0$
 - C. $F \geq 0$
 - D. $F \neq 0$
24. If $9^{4x+1} = 27^{6x-1}$, then x is
- A. 1
 - B. $\frac{2}{7}$
 - C. $\frac{1}{5}$
 - D. $\frac{1}{2}$
25. If $\log_2(2a - 7) = 3$, then the value of a is
- A. 5.0
 - B. 6.5
 - C. 7.5
 - D. 8.0

26. Which graph represents an exponential function?

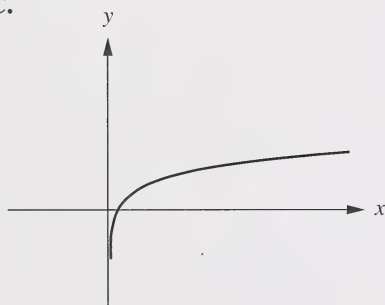
A.



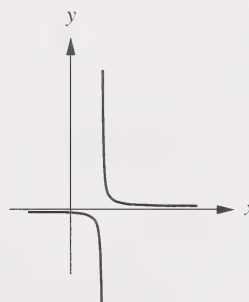
B.



C.



D.

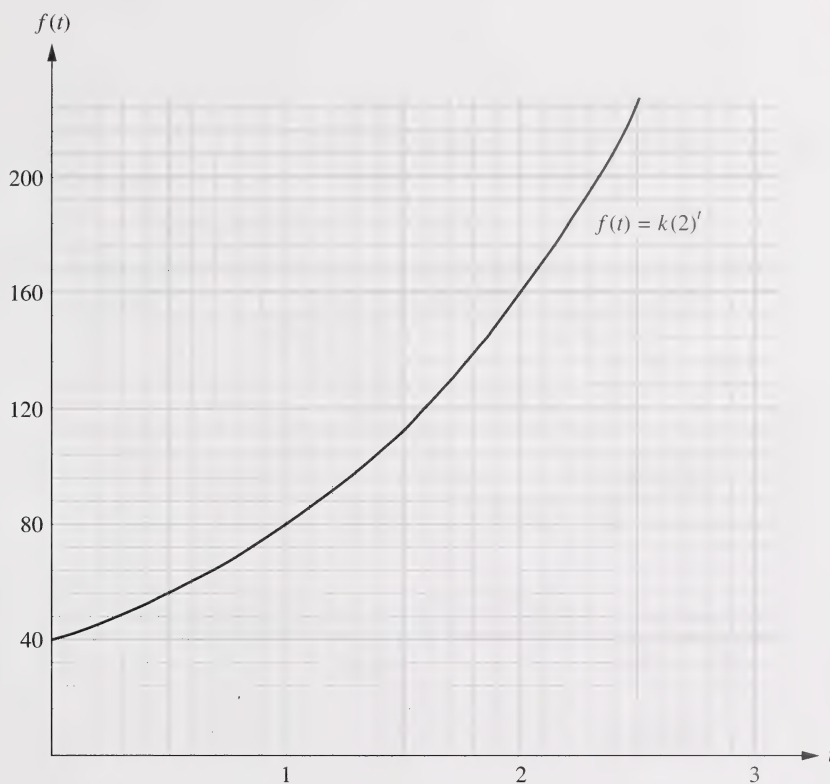


27. The half-life of a tracer element in the human body is 100 minutes. At noon, the mass of the tracer element is 0.700 g. Correct to the nearest thousandth of a gram, the expected mass of the same tracer element in 320 minutes is

- A. 0.093 g
- B. 0.076 g
- C. 0.066 g
- D. 0.044 g

28. In solving the equation $\log_6(x - 5) + \log_6(x - 6) = 1$, a student correctly arrives at a step where $x = 8$ or $x = 3$. When these two values of x are verified,
- A. neither $x = 8$ nor $x = 3$ satisfies the equation
 - B. both $x = 8$ and $x = 3$ satisfy the equation
 - C. only $x = 3$ satisfies the equation
 - D. only $x = 8$ satisfies the equation
29. The range of $f(x) = \log_2 x$ is
- A. $x > 0$
 - B. $x \in R$
 - C. $f(x) > 0$
 - D. $f(x) \in R$
30. Which expression is always equivalent to $\log_3(27a)$?
- A. $3 + \log_3(a)$
 - B. $3 \log_3(a)$
 - C. $\frac{1}{3} + \log_3(a)$
 - D. $\frac{1}{3} \log_3(a)$

31. The graph and equation shown below describe the number of reproducing fruit flies, $f(t)$, in a jar after t hours.



How many hours will it take for the number of fruit flies to reach an expected maximum of 2000?

- A. 25
- B. 40
- C. $\log_{10} 25$
- D. $\log_2 50$

32. An army squad has 11 members, one of whom is a corporal. In which of the following formations can the squad be arranged in $9!$ ways?
- A. A circle
 - B. A single row
 - C. A circle with the corporal in the centre
 - D. A double row with the corporal at the end
33. Regardless of order in which they are selected, the number of ways of selecting 3 boys and 2 girls from 10 boys and 12 girls is
- A. 186
 - B. 7 920
 - C. 316 008
 - D. 950 400
34. A student has one dime, one penny, one nickel, and one quarter. The number of different sums of money that can be formed using two of these coins is
- A. 16
 - B. 12
 - C. 8
 - D. 6

35. If each letter is used no more than once in each arrangement, the number of 5-letter arrangements each beginning with the letter **P** that can be made from the letters in the word **COMPUTER** is
- A. 120
 - B. 840
 - C. 2 401
 - D. 2 520
36. In the expansion of $(x^2 - 2)^4$, the numerical coefficient of x^2 is
- A. -32
 - B. -4
 - C. 16
 - D. 24
37. The number of ways in which 7 different keys can be arranged on a key ring is
- A. 360
 - B. 720
 - C. 2 520
 - D. 5 040

38. Students enrolling in a business degree program at a university must have 5 prerequisite courses:

- English 30
- Mathematics 30
- a course from Group *A*
- a course from Group *B*
- a course from Group *C*

The courses in Groups *A*, *B*, and *C* are:

Group <i>A</i>	Group <i>B</i>	Group <i>C</i>
Social Studies 30	Art 30	Biology 30
French 30	Commercial Art 35	Chemistry 30
	Visual Communications 32	Physics 30
	Drama 30	Science 30
	Music 30	
	Performing Arts 35	
	Physical Education 30	

How many ways can a student satisfy the entrance requirements for this business degree program?

- A. 15
- B. 30
- C. 56
- D. 112
39. An example of a finite sequence is
- A. $8, 15, 22, \dots, (7n+1), \dots, n \in N$
- B. $8, 15, 22, \dots, (7n+1), \dots 141, n \in N$
- C. $t_n = 7n + 1, n \in N$
- D. $t_1 = 8; t_{n+1} = t_n + 7, n \in N$

40. In a geometric sequence, the first term is 8 and the common ratio is $\frac{1}{2}$. The sum of the first 6 terms of this sequence is
- A. $\frac{255}{16}$
- B. $\frac{85}{16}$
- C. $\frac{63}{4}$
- D. $\frac{21}{4}$
41. In a geometric sequence, the first term is 5 and the common ratio is 3. If the n th term, t_n , is 32 805, then the value of n is
- A. 9
- B. 8
- C. 7
- D. 6
42. A quantity of water contains 100 g of inorganic impurities. Each time this quantity of water passes through a filter, 20% of its inorganic impurities are removed. How many grams of inorganic impurities are still in the water after it passes through 5 filters?
- A. 40.96 g
- B. 32.77 g
- C. 16.00 g
- D. 0.16 g

You have now completed Part A. Proceed directly to Part B.

Part B: Numerical Response

7 Questions

Instructions

- Consider all numbers used in the questions to be **exact positive real** numbers and not the result of a measurement.
- Read each question carefully.
- Record your answer on the answer sheet provided by writing it in the boxes and then filling in the corresponding circles.
- **Enter the first digit of your answer in the left-hand box and leave any unused boxes blank.**
- Use an HB pencil only.
- If you wish to change an answer, erase **all** traces of your first answer.

Sample Questions and Solutions

Correct to the nearest tenth of a radian, 40° is equal to _____ rad.

$$40^\circ = 0.6981317008 \dots \text{ rad}$$

Record 0.7 on the answer sheet

0	.	7	
•	•	•	•
•	•	•	•
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	•	7
8	8	8	8
9	9	9	9

For the arithmetic series $-8 + (-5) + (-2) + \dots + (85)$, the number of terms is _____.

$$85 = -8 + (n - 1)(3)$$

$$93 = 3n - 3$$

$$n = 32$$

Record 32 on the answer sheet

3	2		
•	•	•	•
•	•	•	•
1	1	1	1
2	•	2	2
•	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

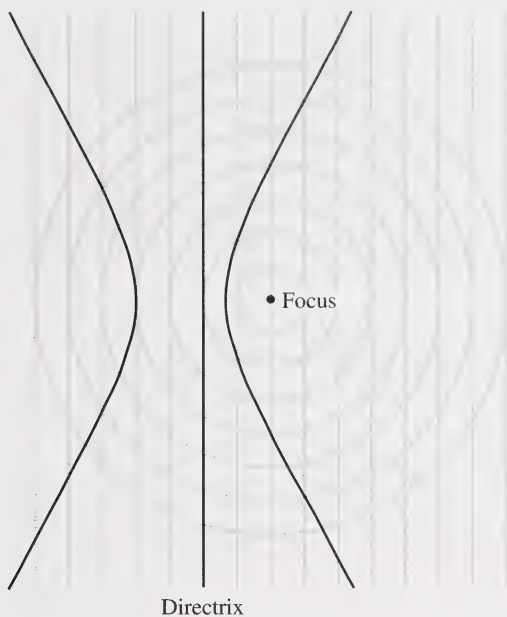
Start Part B immediately.

1. A potential zero of $P(x) = 2x^3 + 5x^2 - 2x + 3$ is $-\frac{3}{2}$. The value of $P\left(-\frac{3}{2}\right)$, correct to the nearest tenth, is _____.

2. If $7 \cos \theta + 1 = 0$, $180^\circ < \theta < 360^\circ$, then the measure of θ , correct to the nearest degree, is _____.

3. If $3 \sin^2 \theta + 5 \sin \theta - 2 = 0$, $0^\circ \leq \theta \leq 90^\circ$, then the measure of θ , correct to the nearest tenth of a degree, is _____.

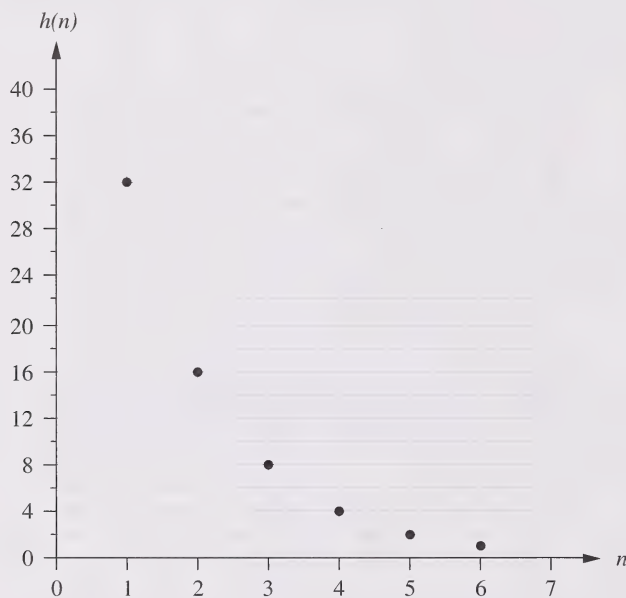
4. The value of the eccentricity of the following hyperbola, correct to the nearest tenth, is _____.



5. The number of different ways that 6 volleyball players can be seated on a bench so that 2 specified players are always sitting side by side is _____.

6. The expression $\sin^n \theta$ is used as a shorter way of writing $(\sin \theta)^n$.
If $\sin^n 70^\circ = 0.3473$, then the value of n , correct to the nearest tenth,
is _____.

7. The graph of a geometric sequence is shown below.



Correct to the nearest tenth, the common ratio of this sequence $h(n)$
where $n \in N$ is _____.

You have now completed Part B. Proceed directly to Part C.

Part C: Written Response

4 Questions

Instructions

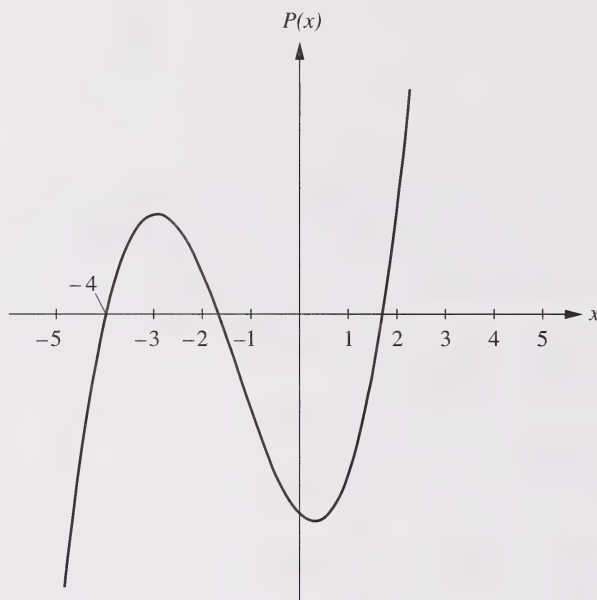
- Consider all numbers used in the question to be **exact real** numbers and not the result of a measurement.
- Read each question carefully.
- Write your answers in the examination booklet as neatly as possible.
- For full marks, your answers **must show all** pertinent explanations, calculations, and formulas.
- Your answers **should be** presented in a well-organized manner using complete sentences for a written response, and correct units and significant digits for a numerical response.

Note: The perforated pages at the back of this booklet may be torn out and used for your rough work. **No marks** will be given for work done on the tear-out pages.

Start Part C immediately.

5 marks

1. The graph of $P(x) = 4x^3 + 16x^2 - 12x - 48$ is shown below.



Verify algebraically that the graph shown is the graph of $P(x)$. Write a concluding statement to justify your verification.

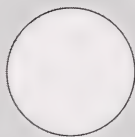
4 marks

2. Fred has designed an exercise program for himself. He plans to ride a stationary bike daily, increasing the length of time he rides by 2 min per day.

As an encouragement to continue this program, he will reward himself when the **total** time spent riding is an exact number of hours. If he begins with 2 min on the first day, how many days will it take him to ride an exact number of hours so he can reward himself for the first time?



7 marks



3. Some school boards are discussing possible changes to the school year. One proposal is to have students take 4 two-week holidays throughout the year instead of taking holidays during the months of July and August. Christmas and spring breaks would not change.

A school board wants to survey the communities it serves to find out how people feel about this proposed change.

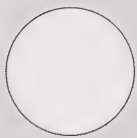
You have been hired to design the survey for the school board. Your job is to:

- define a population that could be sampled
- identify and explain how a sample will be chosen from this population
- provide the wording for an appropriate question that will give the school board relevant data
- explain why the format of the question that you used will give the school board the information they require

Use the space below and on page 29 to present your survey design.

(Question 4 starts on page 30.)

Total: 5 marks



4. The foci, points A and B, of a quadratic relation, and a point, P, on that quadratic relation are shown below.



(3 marks)

- a. Plot at least three more points that lie on this quadratic relation and use these points to complete the graph of the quadratic relation.

- b.** Explain what happens to the shape of this quadratic relation if the foci (points A and B) are moved closer together.

(1 mark)

- c.** Explain what happens to the value of the eccentricity of this quadratic relation if the foci (points A and B) are moved closer together.

(1 mark)

*You have now completed the examination.
If you have time, you may wish to check your answers.*

Mathematics 30 Formula Sheet

The following information may be useful in writing this examination.

- The roots of the quadratic equation $ax^2 + bx + c = 0$ are

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

- The distance between two points (x_1, y_1) and (x_2, y_2) is

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Quadratic Relations

- $e = \frac{|PF|}{|PD|}$

Trigonometry

- arc length $a = r\theta$
- $\sin^2 A + \cos^2 A = 1$
- $1 + \tan^2 A = \sec^2 A$
- $1 + \cot^2 A = \csc^2 A$
- $\sin(A + B) = \sin A \cos B + \cos A \sin B$
- $\sin(A - B) = \sin A \cos B - \cos A \sin B$
- $\csc A = \frac{1}{\sin A}$
- $\sec A = \frac{1}{\cos A}$
- $\cot A = \frac{\cos A}{\sin A}$
- $\cos(A + B) = \cos A \cos B - \sin A \sin B$
- $\cos(A - B) = \cos A \cos B + \sin A \sin B$

Permutations and Combinations

- ${}_nP_r = \frac{n!}{(n-r)!}$
- ${}_nC_r = \frac{n!}{r!(n-r)!}$
- In the expansion of $(x + y)^n$, the general term is $t_{k+1} = {}_nC_k x^{n-k} y^k$

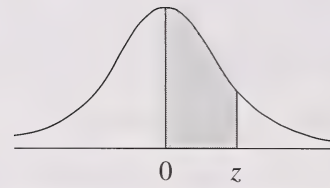
Sequences and Series

- $t_n = a + (n-1)d$
- $S_n = \frac{n[2a + (n-1)d]}{2}$
- $S_n = n\left(\frac{a + t_n}{2}\right)$
- $t_n = ar^{n-1}$
- $S_n = \frac{a(r^n - 1)}{r - 1}, r \neq 1$
- $S_n = \frac{rt_n - a}{r - 1}, r \neq 1$

Exponential and Logarithmic Function

- $\log_a mn = \log_a m + \log_a n$
- $\log_a \frac{m}{n} = \log_a m - \log_a n$
- $\log_a m^n = n \log_a m$

$$z = \frac{x - \mu}{\sigma}$$



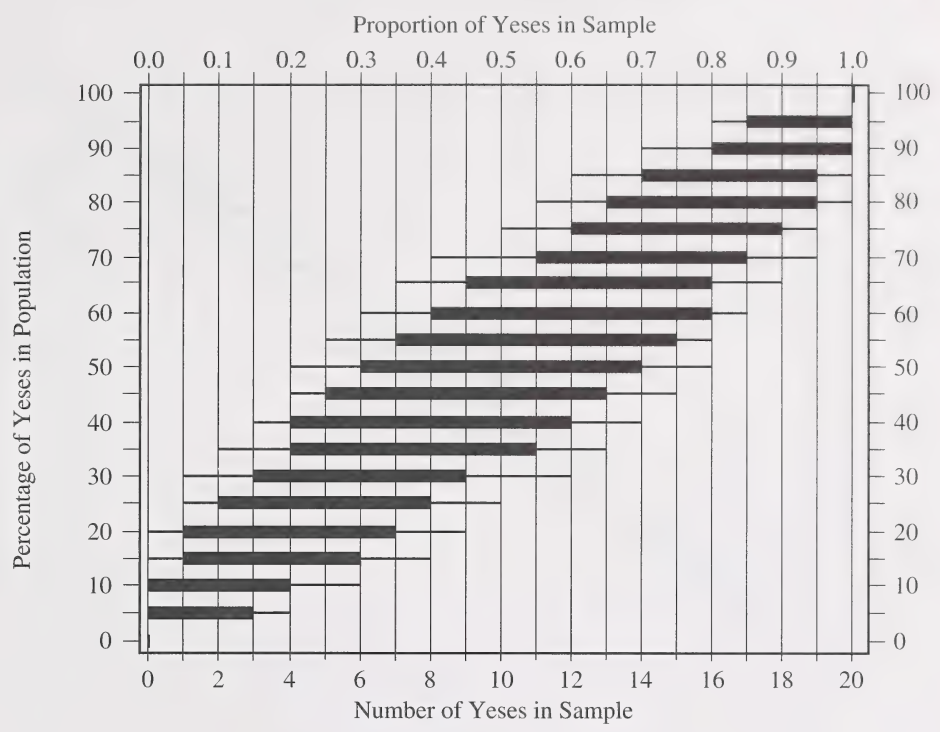
Areas under the Standard Normal Curve

<i>z</i>	0	1	2	3	4	5	6	7	8	9
0.0	0.0000	0.0040	0.0080	0.0120	0.0160	0.0199	0.0239	0.0279	0.0319	0.0359
0.1	0.0398	0.0438	0.0478	0.0517	0.0557	0.0596	0.0636	0.0675	0.0714	0.0754
0.2	0.0793	0.0832	0.0871	0.0910	0.0948	0.0987	0.1026	0.1064	0.1103	0.1141
0.3	0.1179	0.1217	0.1255	0.1293	0.1331	0.1368	0.1406	0.1443	0.1480	0.1517
0.4	0.1554	0.1591	0.1628	0.1664	0.1700	0.1736	0.1772	0.1808	0.1844	0.1879
0.5	0.1915	0.1950	0.1985	0.2019	0.2054	0.2088	0.2123	0.2157	0.2190	0.2224
0.6	0.2258	0.2291	0.2324	0.2357	0.2389	0.2422	0.2454	0.2486	0.2518	0.2549
0.7	0.2580	0.2612	0.2642	0.2673	0.2704	0.2734	0.2764	0.2794	0.2823	0.2852
0.8	0.2881	0.2910	0.2939	0.2967	0.2996	0.3023	0.3051	0.3078	0.3106	0.3133
0.9	0.3159	0.3186	0.3212	0.3238	0.3264	0.3289	0.3315	0.3340	0.3365	0.3389
1.0	0.3413	0.3438	0.3461	0.3485	0.3508	0.3531	0.3554	0.3577	0.3599	0.3621
1.1	0.3643	0.3665	0.3686	0.3708	0.3729	0.3749	0.3770	0.3790	0.3810	0.3830
1.2	0.3849	0.3869	0.3888	0.3907	0.3925	0.3944	0.3962	0.3980	0.3997	0.4015
1.3	0.4032	0.4049	0.4066	0.4082	0.4099	0.4115	0.4131	0.4147	0.4162	0.4177
1.4	0.4192	0.4207	0.4222	0.4236	0.4251	0.4265	0.4279	0.4292	0.4306	0.4319
1.5	0.4332	0.4345	0.4357	0.4370	0.4382	0.4394	0.4406	0.4418	0.4429	0.4441
1.6	0.4452	0.4463	0.4474	0.4484	0.4495	0.4505	0.4515	0.4525	0.4535	0.4545
1.7	0.4554	0.4564	0.4573	0.4582	0.4591	0.4599	0.4608	0.4616	0.4625	0.4633
1.8	0.4641	0.4649	0.4656	0.4664	0.4671	0.4678	0.4686	0.4693	0.4699	0.4706
1.9	0.4713	0.4719	0.4726	0.4732	0.4738	0.4744	0.4750	0.4756	0.4761	0.4767
2.0	0.4772	0.4778	0.4783	0.4788	0.4793	0.4798	0.4803	0.4808	0.4812	0.4817
2.1	0.4821	0.4826	0.4830	0.4834	0.4838	0.4842	0.4846	0.4850	0.4854	0.4857
2.2	0.4861	0.4864	0.4868	0.4871	0.4875	0.4878	0.4881	0.4884	0.4887	0.4890
2.3	0.4893	0.4896	0.4898	0.4901	0.4904	0.4906	0.4909	0.4911	0.4913	0.4916
2.4	0.4918	0.4920	0.4922	0.4925	0.4927	0.4929	0.4931	0.4932	0.4934	0.4936
2.5	0.4938	0.4940	0.4941	0.4943	0.4945	0.4946	0.4948	0.4949	0.4951	0.4952
2.6	0.4953	0.4955	0.4956	0.4957	0.4959	0.4960	0.4961	0.4962	0.4963	0.4964
2.7	0.4965	0.4966	0.4967	0.4968	0.4969	0.4970	0.4971	0.4972	0.4973	0.4974
2.8	0.4974	0.4975	0.4976	0.4977	0.4977	0.4978	0.4979	0.4979	0.4980	0.4981
2.9	0.4981	0.4982	0.4982	0.4983	0.4984	0.4984	0.4985	0.4985	0.4986	0.4986
3.0	0.4987	0.4987	0.4987	0.4988	0.4988	0.4989	0.4989	0.4989	0.4990	0.4990
3.1	0.4990	0.4991	0.4991	0.4991	0.4992	0.4992	0.4992	0.4992	0.4993	0.4993
3.2	0.4993	0.4993	0.4994	0.4994	0.4994	0.4994	0.4994	0.4995	0.4995	0.4995
3.3	0.4995	0.4995	0.4995	0.4996	0.4996	0.4996	0.4996	0.4996	0.4996	0.4997
3.4	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4998
3.5	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998
3.6	0.4998	0.4998	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999
3.7	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999
3.8	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999
3.9	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000

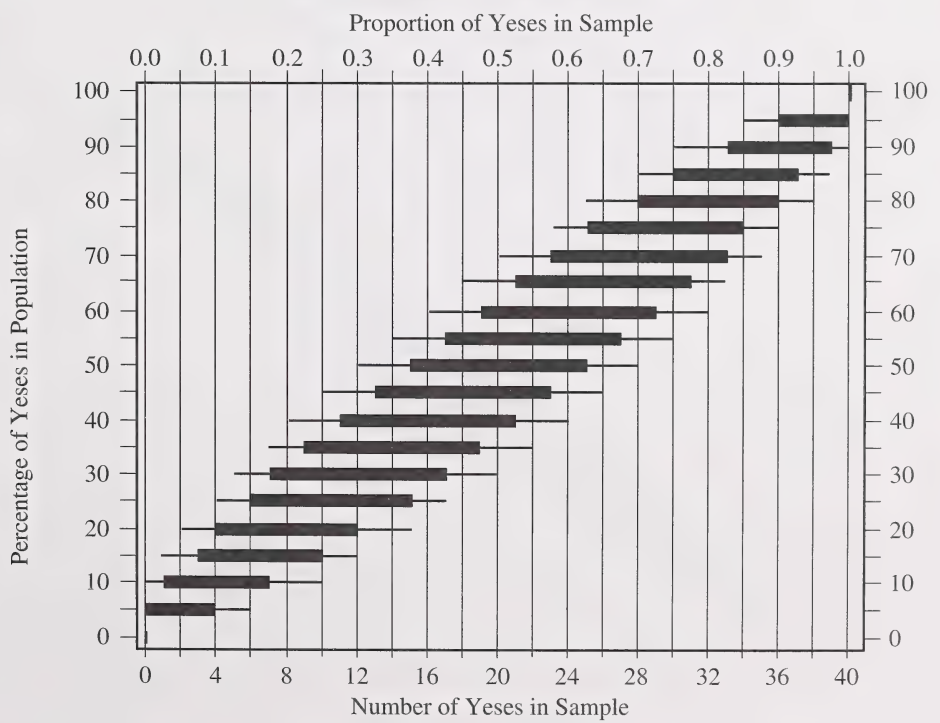
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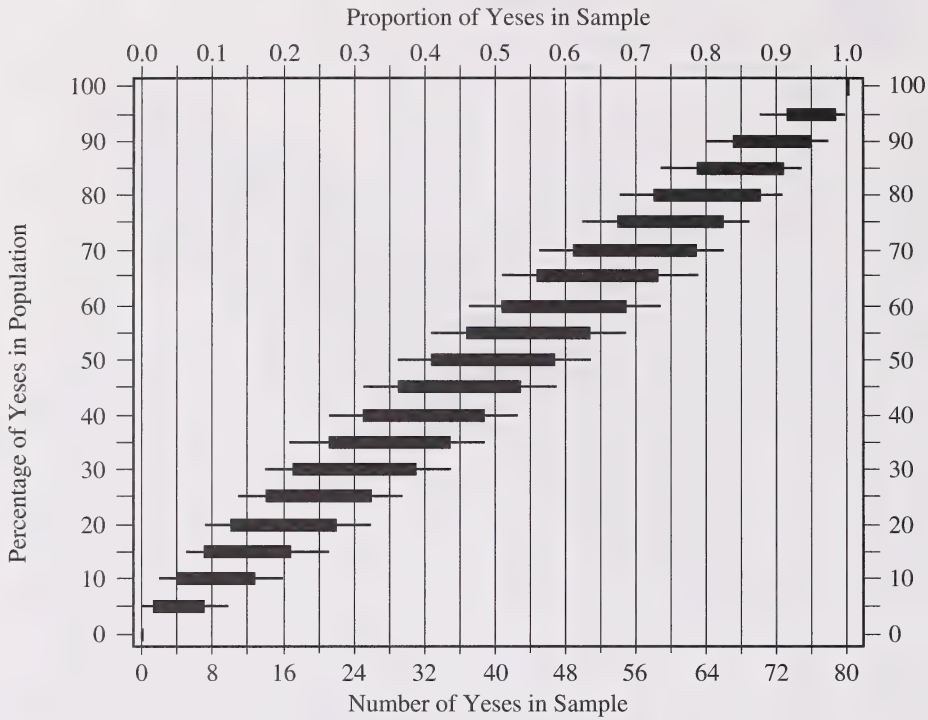
90% Box Plots from Samples of Size 20



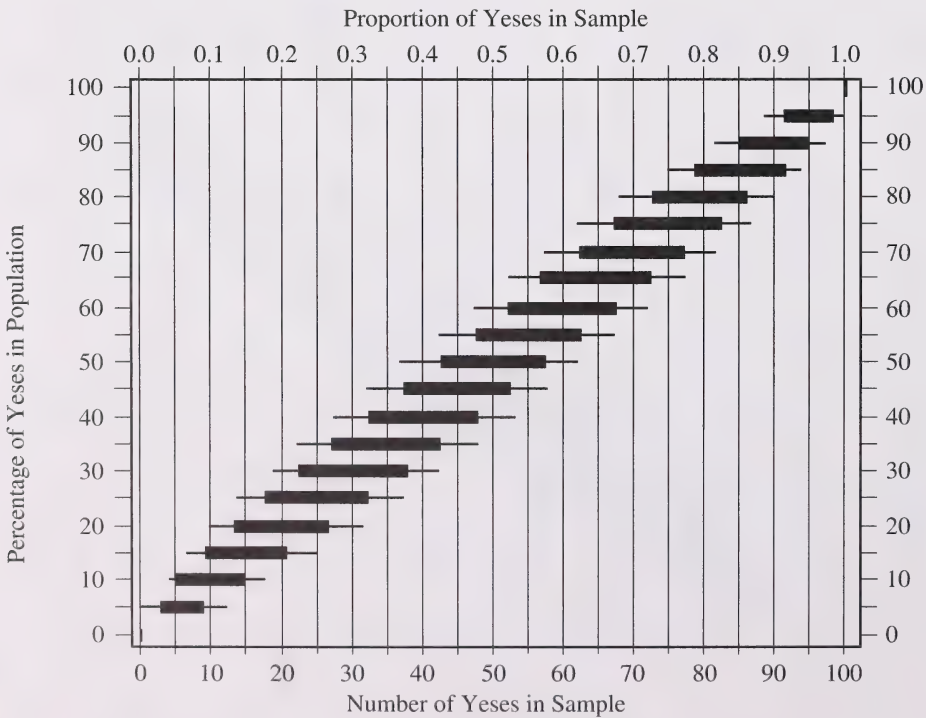
90% Box Plots from Samples of Size 40



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